FLUOR DANIEL GTI

O.E.P.A.
S.E.D.O.
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August 12, 1996

Mr. Tom Webster
Environmental Coordinator
Wheeling-Pittsburgh Steel Corporation
Yorkville Plant
219 Public Road
Yorkville, OH 43971

Dear Mr. Webster:

Re: Closure of Drum Storage Area
Martins Ferry Plant
Martins Ferry, Ohio
Fluor Daniel GTI Project No. 010030561

Fluor Daniel GTI provided oversight for closure of the drum storage area at the Martins Ferry plant. Closure was conducted in accordance with the procedures contained in the Generator Closure Plan for the Drum Storage Area prepared in July 1995 and approved by the OEPA. Closure required completion of the following tasks:

1. Removal of remaining waste drums and loose dirt from the storage pad.
2. Decontamination of the storage pad.
3. Verification of decontamination procedures.
4. Inspection of the drum storage pad.

This letter report documents results of the closure.

1.0 Removal of Remaining Waste Drums and Loose Dirt

Wheeling-Pittsburgh Steel Corporation (WPSC) removed the remaining drums from the pad. In addition, WPSC removed the dirt pile that was located at the southern end of the pad adjacent to Building #100. This dirt was placed into a roll off box, sampled, and analyzed by American Waste for disposal characterization. The data indicate that the dirt is not hazardous. Copies of the analytical results for the dirt pile are contained in Attachment 1.

2.0 Decontamination of the Storage Pad

WPSC contracted Fluor Daniel GTI to provide closure oversight for the former drum storage area. WPSC contracted Industrial Waste Control (IWC), located in Youngstown, Ohio, to decontaminate the pad. IWC mobilized a tank truck and two vac trucks to the site for each wash event.

Decontamination consisted of a total of two wash/rinse events. Each wash/rinse event consisted of a detergent water wash followed by two rinses with potable water. The two wash/rinse events were completed on April 25 and July 1, 1996 respectively. Decontamination wash/rinse waters were drummed and tested for appropriate disposal.

Prior to initiating the wash cycle, the outlet from the storm water catch basin located along the southeast edge of the pad was blocked to prevent wash waters from entering the storm sewer system. Decontamination was accomplished by spraying a portion of the pad with a detergent/potable water solution. The wash water was immediately collected with vacuum lines and contained in the vac trucks. Following the detergent water wash, the contents of the vac trucks were emptied into drums. Verification samples were collected for analysis, as discussed below. The drums were labeled, dated, sealed, and placed on a section of the pad for storage prior to disposal.

Following the detergent water wash, the vac trucks were cleaned with potable water. The first rinse cycle was then initiated and was accomplished by spraying the pad with potable water and collecting the rinseate in the vac trucks. Following completion of the rinse cycle, the contents of the vac trucks were emptied into drums. Verification samples were collected for analysis. The drums were labeled, dated, sealed and placed on a portion of the pad for storage prior to disposal. This procedure was repeated for the second rinse cycle.

The entire wash/rinse cycle was repeated on July 1, 1996.

3.0 Verification Sampling and Analysis

In order to document the degree of decontamination of the pad, the closure plan contained provisions for collecting rinseate samples and analyzing the samples for a specified list of parameters. The analytical list that was contained in the approved closure plan was developed based upon an evaluation of the materials stored in the drums on the pad versus the constituents contained in Appendix VIII to OAC 3745-51-11. Based on this evaluation, it was determined that rinseate samples would be analyzed for barium, cadmium, lead, xylene, and ethylbenzene. Verification limits were established based on the provisions contained in the OEPA's Closure Plan Review Guidance (OEPA, Division of Solid and Hazardous Waste Management, May, 1991). The following table identifies the analytical program and verification limits for closure of the drum storage pad.

Table 1

Parameter	Verification Limit (mg/l)
Barium	30
Cadmium	0.15
Lead	0.75
Xylene	1
Ethylbenzene	1

For the April 25 wash event, Fluor Daniel GTI collected verification samples for analysis following the second rinse cycle. Rinseate samples were collected directly from the lip of the vac truck and placed into laboratory prepared sample jars. Rinseate samples were returned to RECRA Laboratory, located in Monroeville, Pennsylvania, for analysis for the parameters listed in Table 1. Results of the verification sampling program for the April 25 wash/rinse event are summarized in Table 2 and illustrated in Figure 1. The data indicate that the initial wash/rinse event was not successful in reducing constituent concentrations to verification limits.

In addition to the collection of rinseate samples for verification analysis, samples were also collected of the soil/sediment sludge that accumulated in the vac trucks. Sludge samples were collected following the detergent water wash and after each rinse cycle. Sludge samples from the detergent water wash and a composite of the two rinse cycles were analyzed for disposal characterization by American Waste Management's Antech Laboratory. For the sludge sample collected following the detergent wash, the only parameter reported in excess of respective detection limits was Total Petroleum Hydrocarbons (TPH) at a concentration of 8,600 mg/kg. For the composite rinse sludge sample, TPH was measured at 5,600 mg/kg and TCLP lead at 0.13 mg/l. All other parameters were non-detect in the composite rinse sample. Neither sample was considered hazardous for disposal purposes.

The closure plan required that a second wash/rinse cycle be conducted in an attempt to further reduce constituent concentrations. The second wash/rinse event was conducted on July 1. Prior to initiating the second wash/rinse cycle, Fluor Daniel GTI collected a sample of the potable water from the tank, and one rinseate sample from each of the vac trucks in order to document that the potable water wash and the vac trucks were "clean". Rinseate samples were collected from the vac trucks by spraying the inside of the vac tank with the water from the potable water tank. One sample was collected from the lip of each of the vac trucks. Rinseate samples from the vac truck and the potable water sample were analyzed for total and dissolved lead, barium, and cadmium, xylene and ethylbenzene. Analytical results are summarized in Table 3. The data indicate that, except for ethylbenzene that was measured at a concentration of 5.8 ug/l, the potable water and the vac trucks did not contain constituent concentrations in excess of the verification limits.

Fluor Daniel GTI collected verification samples following the detergent water wash and after the first and second rinse cycles. Results of these analyses are provided in Table 2. The data indicate that, although constituent concentrations decreased, the lead concentration from the second rinse cycle exceeds the verification limit of 0.75 mg/l. However, the rinseate data indicate that in the detergent water wash and first rinse, a significant portion of the measured concentrations is attributable to particulates in the sample. By the final rinse, the measured total concentrations approximately equal the dissolved concentrations indicating that particulate matter has been removed and the measured concentration can be attributed to solubilizing material from the pad.

4.0 Summary

The closure plan required that WPSC complete a total of two complete wash/rinse cycles. If after the second wash/rinse cycle, the rinseate data indicate that verification limits are not met, then WPSC is to provide the rinseate data to the OEPA. The data indicate that the second wash/rinse cycle was not successful in reducing the lead concentration in the rinseate samples to the verification limit. The rinseate sample from the second rinse returned a lead concentration of 1.3 mg/l. However, the total lead concentration (1.3 mg/l) approximately equals the dissolved lead concentration of 1.2 mg/l indicating that particulates have been removed and the remaining concentrations are due to solubilizing material from the pad. Concentrations of barium, cadmium, ethylbenzene and total xylenes are below respective verification limits.

A review of the data generated for wastes stored on the pad and soils removed from the pad prior to initiation of closure activities indicate that none of these materials contained TCLP lead in concentrations exceeding 0.21 mg/l. Wastes stored on the pad included alkali sludge, waste acids, paint wastes, and waste grease. Lead was not detected in drummed samples of wastes stored on the pad. TCLP lead was detected in samples collected from the dirt pile located at the southern end of Building 100 (0.051 mg/l) and in dirt samples from the eastern edge of the pad (0.21 mg/l). In addition, the TCLP lead concentration in the composite sludge sample collected from the first two rinse cycles was 0.13 mg/l. These concentrations are significantly less than the lead concentrations obtained in the final rinseate sample which would indicate that the lead remaining on the pad is not the result of waste storage activities associated with the pad. It is likely that the lead concentrations measured in the leachate are the result of historic use of the pad by vehicles driving onto or parked on the pad. In addition, the pad is located in the proximity of Ohio State Route 7, which could also be a source of lead emissions to the pad. The EPA Document, "Demonstration of Nonpoint Pollution Abatement through Improved Street Cleaning Practices" (August 1979), indicates that the average nationwide pollutant strength associated with street surface particulates for lead range from 0 mg/kg to 10,000 mg/kg. The average strength is 1,800 mg/kg indicating that vehicle emissions contribute a significant quantity of lead to the environment (Attachment 2).

Therefore, although the final lead rinseate concentration exceeds the verification limit of 0.75 mg/l, Fluor Daniel GTI maintains that the final rinseate concentration is sufficient for demonstrating closure of the pad. Hazardous waste and hazardous waste constituents associated with former drum storage activities have been removed from the pad. The residual lead on the pad is most likely related to vehicle emissions associated with the historic use of the pad by moving and/or parked vehicles and to the proximity of the pad to Ohio State Route 7. The residual lead on the pad poses no threat to human health since it is not readily bioavailable to humans who come into contact with the pad. Based on the above discussion, Fluor Daniel GTI maintains that no further action is required with respect to closure of the drum storage pad.

Fluor Daniel GTI appreciated this opportunity to provide our services to Wheeling Pittsburgh Steel Corporation. A final report will be issued for this project pending receipt of comments from the OEPA on the verification data. The report will summarize closure procedures and include copies of analytical reports and waste manifests. In the meantime, if you have any questions or if I can be of further assistance, I can be reached at 412/823-5300.

Sincerely,
Fluor Daniel GTI

Mary M. Washko
Lead Geologist

cc: File

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Attachment 1

Analytical Results

Dirt Pile

ANTECH LTD.
CASE NARRATIVE

I. PROJECT LOGIN INFORMATION:

A: PROJECT NUMBERS:

ANTECH LTD.: 96-0348
CLIENT: AWS ID# 19014-2 (Jim Smith)

B: SAMPLE IDENTIFICATIONS:

ANTECH LTD.: 9601-1988
CLIENT: Pad Cleanup

C: SHIPPING/RECEIVING COMMENTS:

None

II. PREPARATION/ANALYSIS COMMENTS:

A: GENERAL CHEMISTRY:
None

B: METALS:
None

C: ORGANICS:

1. VOLATILES:
None

2. SEMIVOLATILES:
None

3. PESTICIDES/PCBS:
None

III. GENERAL COMMENTS:

Trailing zeroes and decimal places appearing on the data should not be interpreted as precision of the analytical procedure, but rather as a result of reporting format.
Please refer to the enclosed TCLP Regulatory Levels table for appropriate regulatory levels and hazardous waste numbers.

Table 1
General Data Table
American Waste Management Services, Inc.
Antech Ltd. Project No. 96-0348
Waste Characterization: AWS ID# 19014-2 (Jim Smith)
Wheeling Pittsburgh Steel;Martin's Ferry

Parameter	Analytical Method	Units	Sample Identification 9601-1988 Pad Cleanup (1/25/96)	Sample Identification 9601-1989 Method Blank (1/26/96)
Cyanide (Total)	9012(1)	mg/kg	<1.0	<1.0
Flash Point	1010(1)	°F	>200	NAP(2)
pH	9045(1)	pH units	7.55	NAP
Sulfide (Reactive)	7.3.4.1/9030(1)	mg/kg	97	<10
Total Petroleum Hydrocarbons	3550(1)/418.1(3)	mg/kg	11000	<40
Polychlorinated Biphenyls	8080(1)	mg/kg	6.0	<1.0
TCLP(4) Metals:				
Silver (TCLP)	6010(1)	mg/l	<0.10	<0.10
Arsenic (TCLP)	6010(1)	mg/l	<0.10	<0.10
Barium (TCLP)	6010(1)	mg/l	<10	<10
Cadmium (TCLP)	6010(1)	mg/l	<0.10	<0.10
Chromium (TCLP)	6010(1)	mg/l	<0.10	<0.10
Mercury (TCLP)	7470(1)	mg/l	<0.010	<0.010
Lead (TCLP)	6010(1)	mg/l	0.24	<0.10
Selenium (TCLP)	7740(1)	mg/l	<0.10	<0.10
TCLP Extraction Fluid Data:				
Extraction Fluid	1311(1)	-	No.1	No.1
pH with Deionized Water		pH units	8.09	NAP
pH After Addition of 1 Normal HCL		pH units	3.59	NAP
pH of TCLP Extract		pH units	6.00	4.91
Amount of Sample Extracted		g	50.0	NAP

(1)U.S. Environmental Protection Agency, 1987, Test Methods for Evaluating Solid Waste, SW-846, 3rd ed., Office of Solid Waste and Emergency Response, Washington, DC.
(2)NAP = Not applicable.
(3)U.S. Environmental Protection Agency, 1983, Methods for Chemical Analysis of Water and Wastes, EPA-600/4-79-020, Environmental Monitoring and Support Laboratory, Cincinnati, Ohio.
(4)TCLP = Toxicity Characteristic Leaching Procedure.

Table 2
TCLP(1) Organic Analyses
American Waste Management Services, Inc.
Antech Ltd. Project No. 96-0348
Waste Characterization: AWS ID# 19014-2 (Jim Smith)
Wheeling Pittsburgh Steel;Martin's Ferry

Parameter	CAS(2) Number	Units	Sample Identification 9601-1988 Pad Cleanup (1/25/96)	Sample Identification 9601-1989 Method Blank (1/26/96)
TCLP Volatile Organic Analyses:(8260)(3)				
Benzene	71-43-2	µg/l	<50	<50
2-Butanone	78-93-3	µg/l	<5000	<5000
Carbon tetrachloride	56-23-5	µg/l	<50	<50
Chlorobenzene	108-90-7	µg/l	<1000	<1000
Chloroform	67-66-3	µg/l	<500	<500
1,2-Dichloroethane	107-06-2	µg/l	<50	<50
1,1-Dichloroethene	75-35-4	µg/l	<50	<50
Tetrachloroethene	127-18-4	µg/l	<50	<50
Trichloroethene	79-01-6	µg/l	<50	<50
Vinyl chloride	75-01-4	µg/l	<50	<50
TCLP Base/Neutral Extractables:(8270)(3)				
1,4-Dichlorobenzene	106-46-7	µg/l	<500	<500
2,4-Dinitrotoluene	121-14-2	µg/l	<50	<50
Hexachlorobutadiene	87-68-3	µg/l	<50	<50
Hexachlorobenzene	118-74-1	µg/l	<100	<100
Hexachloroethane	67-72-1	µg/l	<500	<500
Nitrobenzene	98-95-3	µg/l	<100	<100
Pyridine	110-86-1	µg/l	<500	<500
TCLP Acid Extractables:(8270)(3)				
Total Cresol (TCLP)	(4)	µg/l	<5000	<5000
Pentachlorophenol	87-86-5	µg/l	<5000	<5000
2,4,5-Trichlorophenol	95-95-4	µg/l	<5000	<5000
2,4,6-Trichlorophenol	88-06-2	µg/l	<100	<100

(1)TCLP - Toxicity Characteristic Leaching Procedure.
(2)CAS - Chemical Abstracts Services.
(3)U.S. Environmental Protection Agency, 1987, Test Methods for Evaluating Solid Waste, SW-846, 3rd ed., Office of Solid Waste and Emergency Response, Washington, DC.
(4)m-Cresol 108-39-4, o-Cresol 95-48-7, and p-Cresol 106-44-5.

Table 1
General Data Table
American Waste Management Services, Inc.
Antech Ltd. Project No. 96-1755
Waste Characterization; AWS ID# 19108-2; (Jim Smith)
Wheeling Pittsburgh Steel;Martin's Ferry

Parameter	Analytical Method	Units	Sample Identification 9604-2861 Pad Wash Water Sludge (4/25/96)	9604-2862 Method Blank (4/29/96)
Cyanide (Total)	9012(1)	mg/kg	<1.0	<1.0
Flash Point	1010(1)	°F	>200	NAP(2)
pH	9045(1)	pH units	7.68	NAP
Sulfide (Reactive)	7.3.4.1/9030(1)	mg/kg	<10	NAP
Total Petroleum Hydrocarbons	3550(1)/418.1(3)	mg/kg	8600	<40
Polychlorinated Biphenyls	8080(1)	mg/kg	<1.0	<1.0
TCLP(4) Metals:				
Silver (TCLP)	6010(1)	mg/l	<0.10	<0.10
Arsenic (TCLP)	6010(1)	mg/l	<0.10	<0.10
Barium (TCLP)	6010(1)	mg/l	<10	<10
Cadmium (TCLP)	6010(1)	mg/l	<0.10	<0.10
Chromium (TCLP)	6010(1)	mg/l	<0.10	<0.10
Mercury (TCLP)	7470(1)	mg/l	<0.010	<0.010
Lead (TCLP)	6010(1)	mg/l	<0.10	<0.10
Selenium (TCLP)	7740(1)	mg/l	<0.10	<0.10
TCLP Extraction Fluid Data:				
Extraction Fluid	1311(1)	-	No.1	No.1
pH with Deionized Water		pH units	8.49	NAP
pH After Addition of 1 Normal HCL		pH units	3.71	NAP
pH of TCLP Extract		pH units	6.21	4.90
Amount of Sample Extracted		g	45.0	NAP

(1)U.S. Environmental Protection Agency, 1987, Test Methods for Evaluating Solid Waste, SW-846, 3rd ed., Office of Solid Waste and Emergency Response, Washington, DC.
(2)NAP - Not applicable.
(3)U.S. Environmental Protection Agency, 1983, Methods for Chemical Analysis of Water and Wastes, EPA-600/4-79-020, Environmental Monitoring and Support Laboratory, Cincinnati, Ohio.
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Table 2
TCLP(1) Organic Analysis
American Waste Management Services, Inc.
Antech Ltd. Project No. 96-1755
Waste Characterization; AWS ID# 19108-2; (Jim Smith)
Wheeling Pittsburgh Steel;Martin's Ferry

Parameter	CAS(2) Number	Units	Sample Identification 9604-2861 Pad Wash Water Sludge (4/25/96)	9604-2862 Method Blank (4/29/96)
TCLP Volatile Organic Analysis:(8260)(3)				
Benzene	71-43-2	µg/l	<50	<50
2-Butanone	78-93-3	µg/l	<5000	<5000
Carbon tetrachloride	56-23-5	µg/l	<50	<50
Chlorobenzene	108-90-7	µg/l	<1000	<1000
Chloroform	67-66-3	µg/l	<500	<500
1,2-Dichloroethane	107-06-2	µg/l	<50	<50
1,1-Dichloroethene	75-35-4	µg/l	<50	<50
Tetrachloroethene	127-18-4	µg/l	<50	<50
Trichloroethene	79-01-6	µg/l	<50	<50
Vinyl chloride	75-01-4	µg/l	<50	<50
TCLP Base/Neutral Extractables:(8270)(3)				
1,4-Dichlorobenzene	106-46-7	µg/l	<500	<500
2,4-Dinitrotoluene	121-14-2	µg/l	<50	<50
Hexachlorobutadiene	87-68-3	µg/l	<50	<50
Hexachlorobenzene	118-74-1	µg/l	<100	<100
Hexachloroethane	67-72-1	µg/l	<500	<500
Nitrobenzene	98-95-3	µg/l	<100	<100
Pyridine	110-86-1	µg/l	<500	<500
TCLP Acid Extractables:(8270)(3)				
Total Cresol (TCLP)	(4)	µg/l	<5000	<5000
Pentachlorophenol	87-86-5	µg/l	<5000	<5000
2,4,5-Trichlorophenol	95-95-4	µg/l	<5000	<5000
2,4,6-Trichlorophenol	88-06-2	µg/l	<100	<100

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(2)CAS - Chemical Abstracts Services.
(3)U.S. Environmental Protection Agency, 1987, Test Methods for Evaluating Solid Waste, SW-846, 3rd ed., Office of Solid Waste and Emergency Response, Washington, DC.
(4)m-Cresol 108-39-4, o-Cresol 95-48-7, and p-Cresol 106-44-5.

Table 1
General Data Table
American Waste Management Services, Inc.
Antech Ltd. Project No. 96-1754
Waste Characterization; AWS ID# 19107-2; (Jim Smith)
Wheeling Pittsburgh Steel;Martin's Ferry

Parameter	Analytical Method	Units	Sample Identification 9604-2854 Pad Rinse Composite Sludge (4/25/96)	Sample Identification 9604-2855 Method Blank (4/29/96)
Cyanide (Total)	9012(1)	mg/kg	<1.0	<1.0
Flash Point	1010(1)	°F	>200	NAP(2)
pH	9045(1)	pH units	7.86	NAP
Sulfide (Reactive)	7.3.4.1/9030(1)	mg/kg	<10	NAP
Total Petroleum Hydrocarbons	3550(1)/418.1(3)	mg/kg	5600	<40
Polychlorinated Biphenyls	8080(1)	mg/kg	<1.0	<1.0
TCLP(4) Metals:				
Silver (TCLP)	6010(1)	mg/l	<0.10	<0.10
Arsenic (TCLP)	6010(1)	mg/l	<0.10	<0.10
Barium (TCLP)	6010(1)	mg/l	<10	<10
Cadmium (TCLP)	6010(1)	mg/l	<0.10	<0.10
Chromium (TCLP)	6010(1)	mg/l	<0.10	<0.10
Mercury (TCLP)	7470(1)	mg/l	<0.010	<0.010
Lead (TCLP)	6010(1)	mg/l	0.13	<0.10
Selenium (TCLP)	7740(1)	mg/l	<0.10	<0.10
TCLP Extraction Fluid Data:				
Extraction Fluid	1311(1)	-	No.1	No.1
pH with Deionized Water		pH units	8.70	NAP
pH After Addition of 1 Normal HCL		pH units	2.01	NAP
pH of TCLP Extract		pH units	6.35	4.90
Amount of Sample Extracted		g	45.0	NAP

(1)U.S. Environmental Protection Agency, 1987, Test Methods for Evaluating Solid Waste, SW-846, 3rd ed., Office of Solid Waste and Emergency Response, Washington, DC.
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Table 2
TCLP(1) Organic Analysis
American Waste Management Services, Inc.
Antech Ltd. Project No. 96-1754
Waste Characterization; AWS ID# 19107-2; (Jim Smith)
Wheeling Pittsburgh Steel;Martin's Ferry

Parameter	CAS(2) Number	Units	Sample Identification 9604-2854 Pad Rinse Composite Sludge (4/25/96)	9604-2855 Method Blank (4/29/96)
TCLP Volatile Organic Analysis:(8260)(3)				
Benzene	71-43-2	µg/l	<50	<50
2-Butanone	78-93-3	µg/l	<5000	<5000
Carbon tetrachloride	56-23-5	µg/l	<50	<50
Chlorobenzene	108-90-7	µg/l	<1000	<1000
Chloroform	67-66-3	µg/l	<500	<500
1,2-Dichloroethane	107-06-2	µg/l	<50	<50
1,1-Dichloroethene	75-35-4	µg/l	<50	<50
Tetrachloroethene	127-18-4	µg/l	<50	<50
Trichloroethene	79-01-6	µg/l	<50	<50
Vinyl chloride	75-01-4	µg/l	<50	<50
TCLP Base/Neutral Extractables:(8270)(3)				
1,4-Dichlorobenzene	106-46-7	µg/l	<500	<500
2,4-Dinitrotoluene	121-14-2	µg/l	<50	<50
Hexachlorobutadiene	87-68-3	µg/l	<50	<50
Hexachlorobenzene	118-74-1	µg/l	<100	<100
Hexachloroethane	67-72-1	µg/l	<500	<500
Nitrobenzene	98-95-3	µg/l	<100	<100
Pyridine	110-86-1	µg/l	<500	<500
TCLP Acid Extractables:(8270)(3)				
Total Cresol (TCLP)	(4)	µg/l	<5000	<5000
Pentachlorophenol	87-86-5	µg/l	<5000	<5000
2,4,5-Trichlorophenol	95-95-4	µg/l	<5000	<5000
2,4,6-Trichlorophenol	88-06-2	µg/l	<100	<100

(1)TCLP - Toxicity Characteristic Leaching Procedure.
(2)CAS - Chemical Abstracts Services.
(3)U.S. Environmental Protection Agency, 1987, Test Methods for Evaluating Solid Waste, SW-846, 3rd ed., Office of Solid Waste and Emergency Response, Washington, DC.
(4)m-Cresol 108-39-4, o-Cresol 95-48-7, and p-Cresol 106-44-5.

Toxicity Characteristic Leaching Procedure (TCLP)
Regulatory Levels

Contaminant	Regulatory Level (mg/l)	USEPA Hazardous Waste Number
Arsenic	5.0	D004
Barium	100.0	D005
Cadmium	1.0	D006
Chromium	5.0	D007
Lead	5.0	D008
Mercury	0.2	D009
Selenium	1.0	D010
Silver	5.0	D011
Benzene	0.5	D018
Carbon Tetrachloride	0.5	D019
Chlorobenzene	100.0	D021
Chloroform	6.0	D022
Cresol	200.0	D026
1,4-Dichlorobenzene	7.5	D027
1,2-Dichloroethane	0.5	D028
1,1-Dichloroethene	0.7	D029
2,4-Dinitrotoluene	0.13	D030
Hexachlorobenzene	0.13	D032
Hexachlorobutadiene	0.5	D033
Hexachloroethane	3.0	D034
2-Butanone	200.0	D035
Nitrobenzene	2.0	D036
Pentachlorophenol	100.0	D037
Pyridine	5.0	D038
Tetrachloroethene	0.7	D039
Trichloroethene	0.5	D040
2,4,5-Trichlorophenol	400.0	D041
2,4,6-Trichlorophenol	2.0	D042
Vinyl chloride	0.2	D043

GROUNDWATER TECHNOLOGY INC
WHEELING PITTSBURGH STEEL
ANALYTICAL RESULTS

Analyte	UNITS OF MEASURE	RL	Result	Result	Result		
Client Sample ID:			Rinse 2	Rinse 2 RE	comp. soil		
Job Number & Lab Sample ID:			P96-0104 P6010401	P96-0104 P6010401RE	P96-0104 P6010402		
Sample Date:			04/25/96	04/25/96	04/25/96		
TOTAL METALS							
Lead - Total	MG/L	0.020	6.4	6.5	NA		
Barium - Total	MG/L	0	4.5	NA	NA		
Cadmium - Total	MG/L	0.0050	0.15	NA	NA		
TCLP METALS 6010/7470							
Arsenic - Total	MG/L	0.10	NA	NA	0.10 U		
Barium - Total	MG/L	0.050	NA	NA	1.4		
Cadmium - Total	MG/L	0.0050	NA	NA	0.0095		
Chromium - Total	MG/L	0.010	NA	NA	0.010 U		
Lead - Total	MG/L	0.10	NA	NA	0.10 U		
Mercury - Total	MG/L	0.0002	NA	NA	0.00020U		
Selenium - Total	MG/L	0.50	NA	NA	0.50 U		
Silver - Total	MG/L	0.010	NA	NA	0.010 U		
WET CHEMISTRY ANALYSIS							
Chloride	MG/KG	10	NA	NA	30.0		
Sulfate	MG/KG	10.0000	NA	NA	89		
Total Phosphorous	MG/KG	0.10	NA	NA	253		
Toxicity Characteristic Leaching Proce	INVALID	1.0000	NA	NA	DONE		
Toxicity Characteristic Leaching Proce	INVALID	1.0000	NA	NA	DONE		

* Indicates Result is Outside QC Limits
NA = Not Applicable

Client Sample ID:	Rinse 2	comp. soil			
Job Number & Lab Sample ID:	P96-0104 P6010401	P96-0104 P6010402			
Sample Date:	04/25/96	04/25/96			
Analyte (MG/L)	RL	Result	Result		
METHOD 8260 - TCL VOLATILE ORGANICS					
Ethylbenzene	5	5 U	NA		
Total Xylenes	5	5 U	NA		
INTERNAL STANDARDS					
Chlorobenzene-D5	50-200	50	NA		
1,4-Difluorobenzene	50-200	50	NA		
1,4-Dichlorobenzene-D4	50-200	50	NA		
SURROGATES					
Toluene-D8	88-110	49	NA		
p-Bromofluorobenzene	86-115	35	NA		
1,2-Dichloroethane-D4	80-120	46	NA		

Analyte (UG/L)	RL	Result	Result		
METHOD 8260 - TCLP VOLATILES					
Benzene	5	NA	100 U		
2-Butanone	10	NA	200 U		
Carbon Tetrachloride	5	NA	100 U		
Chlorobenzene	5	NA	100 U		
Chloroform	5	NA	100 U		
1,2-Dichloroethane	5	NA	100 U		
1,1-Dichloroethene	5	NA	100 U		
Tetrachloroethene	5	NA	100 U		
Trichloroethene	5	NA	100 U		
Vinyl chloride	5	NA	100 U		

* Indicates Result is Outside QC Limits
NA = Not Applicable

GROUNDWATER TECHNOLOGY

CHAIN OF CUSTODY RECORD

PLANT CODE	PROJECT NAME	NUMBER OF CONTAINERS
	Wheeling Pittsburgh - Martins Ferry	

SAMPLERS (Signature): Mary M Warko

STA. NO.	DATE	TIME	COMP.	GRAB	WELL	STATION LOCATION	NUMBER OF CONTAINERS	Ba, Cd, Pb	Xylene, Ethylbenzene	pH	Tot Metals + VOCs	Cleaner	Sulfate	Phosphorous	CONDUCTIVITY	pH	REMARKS OR OBSERVATIONS
Rinse 2	04/25	910		X			Vtcs, L	X	X	X							Need results Mon. 04/29 PM
Comp. Soil	04/25	830	X				baggie			X	X	X	X	X			

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Relinquished by: (Signature)	Date	Time	Received by: (Signature)
Mary M Warko	04/26						
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Relinquished by: (Signature)	Date	Time	Received by: (Signature)
Relinquished by: (Signature)	Date	Time	Received for Laboratory by: (Signature)	Date	Time	Ice Chest Temp	Ice Chest
				4/26/96	1:14 p	Ambient °C	#

Chain of Custody Tag #

DISTRIBUTION: Original accompanies shipment; Copy to Coordinator Field Files.

Need results for rinse sample by PM on Monday.
Soil sample is normal turn around.

PAGE 1 OF 1

D96-0104

Groundwater Technology Inc
RUSH ANALYSIS & SOIL COMPOSITE
Sample Summary
Recra LabNet

Sample ID: TANK
Lab ID: P6101001
Date Collected: 07/01/96
Time Collected: 08:00

Date Received: 07/02/96
Project No: PA6A6257
Client No: L70023
P.O. No:

Parameter	Result	Flag	Detection Limit	Units	Method	Date/Time Analyzed	Analyst
8020-XYLENE & ETHYLBENZENE ONLY							
Ethylbenzene	<0.20	U	0.20	UG/L	8020	07/12/96	BD
Total Xylenes	<0.30	U	0.30	UG/L	8020	07/12/96	BD
Surrogates:							
a,a,a-Trifluorotoluene	101		0	%	8020	07/12/96	BD
Metals Analysis							
Lead - Total	<0.10	U	0.10	MG/L	6010	07/11/96	JMY
Barium - Total	0.072		0.050	MG/L	6010	07/11/96	JMY
Cadmium - Total	<0.0050	U	0.0050	MG/L	6010	07/11/96	JMY
Barium - Soluble	0.075		0.050	MG/L	6010	07/12/96	JMY
Cadmium - Soluble	<0.0050	U	0.0050	MG/L	6010	07/12/96	JMY
Lead - Soluble	<0.10	U	0.10	MG/L	6010	07/12/96	JMY

1A6A6257-1 f96-1018

FLUOR DANIEL GTI

CHAIN OF CUSTODY RECORD

SITE ID | PROJECT NAME: Wheeling-Pitt Steel Martins Ferry

SAMPLERS (Signature):

SAMPLE ID	DATE	TIME	COMP.	GATE	WELL	DEPTH	NUMBER OF CONTAINERS	ANALYSES: Xylene / Ethylbenzene	Total Barium, Cadmium, and Lead	Dissolved Barium, Cadmium, and Lead							CONDUCTIVITY	pH	TEMPERATURE	REMARKS OR OBSERVATIONS
Trunk	1996 07/01	0800					4	2	1	1										
Trunk #1	07/01	0815					3	1	1	1										
Trunk #2	07/01	0830					3	1	1	1										
Wash	07/01	1210					4	2	1	1										
Rinse #1	07/01	1610					4	2	1	1										
Rinse #2	07/01	1830					4	2	1	1										

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Relinquished by: (Signature)	Date	Time	Received by: (Signature)
	7/2	1200					
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Relinquished by: (Signature)	Date	Time	Received by: (Signature)
Relinquished by: (Signature)	Date	Time	Received for Laboratory by: (Signature)	Date	Time	Ice Chest Temp	Ice Chest Temp	Chain of Custody
				7/2/96	12:00	°C	#	Tag #

*DISTRIBUTION: Original accompanies shipment; copy to Coordinator Field Files.

Attachment 2

EPA Document

United States
Environmental Protection
Agency

Municipal Environmental Research
Laboratory
Cincinnati OH 45268

EPA-600/2-79-161
August 1979

Research and Development

EPA

Demonstration of Nonpoint Pollution Abatement Through Improved Street Cleaning Practices

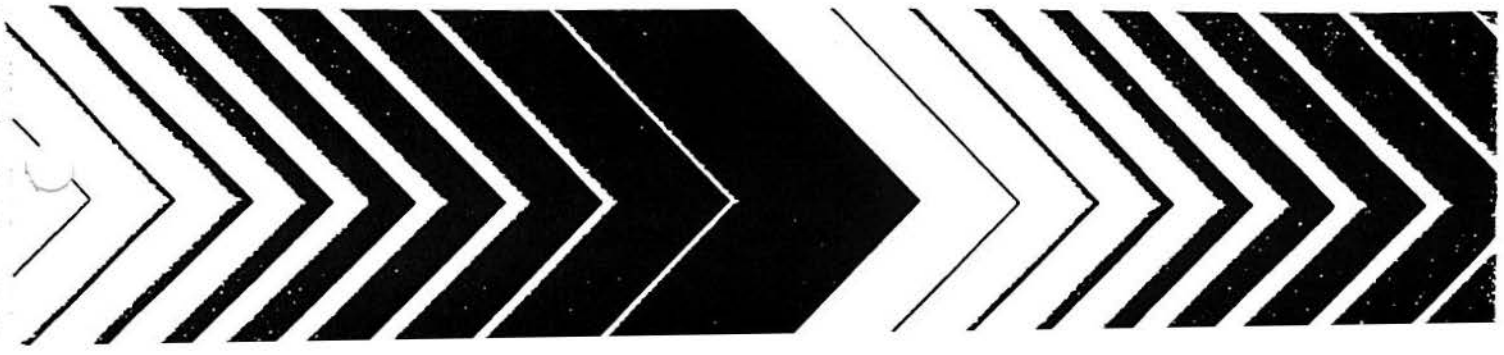

TABLE III-21

SOLID LOADING RATES AND COMPOSITION--NATIONWIDE MEANS AND SUBSTITUTIONS OF THE NATIONWIDE MEANS AT 80% CONFIDENCE LEVEL* (AMY, ET AL., 1974)

	Category	lbs/curb mi/day Loading	Concentrations in micrograms per gram of dry solid														No./gram	
			BOD_5	COD	OPO_4	NO_3	OrgN	Cd	Cr	Cu	Fe	Pb	Mn	Ni	Sr	Zn	TCOLI+	FCOLI+
Climate	Northeast	291_c					$5,970_c$	2.6_b	139_b		$17,700_b$	870_c	363_a	21_c	27_b	260_b		$4.4E5_c$
	Southeast	103_b	$29,100_b$		$2,240_a$		$1,970_a$			137_b		$1,370_b$		21_b	28_b			$7.0E4_d$
	Southwest	50_c			470_b				241_a	78_a		$2,520_b$		57_b	15_a		$5.7E6_d$	
	Northwest	30_c							246_a		$34,500_b$	$2,600_b$			10_c	480_a	$6.8E5_f$	$1.1E4_f$
Land Use	Openspace																	
	Residential		$14,000_b$	$82,000_b$	850_b	550_c	$1,800_a$			93_a		$1,430_b$		28_b				
	Commercial	74_c	$58,700_c$	$269,000_c$	$2,250_c$	$1,580_c$	6.430_a			133_b		$3,440_b$		48_b		520_b		
	Light Industry																	
	Heavy Industry								278_b		$28,600_b$	$1,160_c$	570_b				$8.2E5_e$	
Average Daily Traffic No./day	< 500											$1,210_d$				252_b		$6.9E4_f$
	500-5,000		$9,500_c$	$83,000_c$	741_d	419_b					$18,900_a$	$1,060_c$		17_d	34_c			$3.4E5_d$
	5,000-15,000														18_a			
	< 15,000	82_d											357_a				$3.8E5_a$	
	All data**	156_b	$19,900_b$	$140,000_b$	$1,280_b$	804_b	$2,950_b$	3.4_b	211_a	104_a	$22,000_a$	$1,810_a$	418_a	35_a	21_a	370_a	$2.5E6_c$	$1.7E5_b$

*Only those subset means are shown which differ from the mean of the set of all data at the 80-percent confidence level (Student t ≥ 1.39. Degrees of Freedom ≥ 10). Total number of permitted substitutions = 103. Percent Standard Error of the Mean Subscripting Code: a=0-9, b=10-19, c=20-29, d=30-39, e=40-49, f=50-62.

+Coliform counts are expressed in computer notation, i.e. $E5=10^5$.

** Average TPO_4 is $2,930_c$ and NH_4 is $2,640_c$

TABLE 3-2. AVERAGE NATIONWIDE POLLUTANT STRENGTHS ASSOCIATED WITH STREET SURFACE PARTICULATES

Parameter (ppm[a] except as noted)	Mean Strength	Minimum Strength	Maximum Strength	Standard Deviation	Ratio of Standard Deviation to Mean
BOD_5 (b)	70,000[e]	8500[e]	270,000[e]	80,000[e]	1.1
COD (b)	140,000	17,000	530,000	160,000	1.1
Ortho PO_4 (b)	1300	14	6700	1400	1.1
Total PO_4 (b)	2900	210	5400	[f]	-
NO_3 (b)	800	20	16,000	2600	3.3
NH_4 (b)	2600	600	5400	[f]	-
Kjeldahl N (b)	3000	450	13,000	3100	1.0
Cd (b)	3.4	0	25	3.6	1.1
Cr (b)	210	3	760	110	0.52
Cu (b)	100	8	290	100	1.0
Fe (b)	22,000	2200	72,000	11,000	0.50
Pb (b)	1800	0	10,000	2,000	1.1
Mn (b)	420	100	1600	220	0.52
Ni (b)	35	0	170	38	1.1
Sr (b)	21	0	110	21	1.0
Zn (b)	370	21	1100	210	0.57
Total coliforms (no./gram (d)	2.5×10^6	1.2×10^4	8.6×10^7	[g]	-
Fecal coliforms (no./gram) (d)	1.7×10^5	6.0	1.7×10^7	[g]	-
Asbestos (fibers/gram) (c)	160,000	0	770,000	180,000	1.1
Rubber (c)	4600	500	11,000	2,600	0.57
p, p-DDD (d)	0.082	0.0002	0.27	0.080	0.98
p, p-DDT (d)	0.075	0.0004	0.38	0.12	1.6
Dieldrin (d)	0.028	0.003	0.074	0.028	1.0
Endrin (d)	0.00028	0	0.0022	0.00073	2.6
Lindane (d)	0.0022	0	0.019	0.0063	2.9
Methoxychlor (d)	0.50	0	3.1	1.1	2.2
Methyl parathion (d)	0.0024	0	0.022	0.0073	3.0
PCBs (d)	0.77	0.07	2.3	0.76	1.0

[a] ppm = microgram of pollutant per gram of total dry solids; the mean total solids (b) accumulation was 150 lb/curb-mile/day, with a range of 3 to 2700 and a standard deviation of 370 lb/curb-mile/day.

[b] Amy, et al. (1974) - a compilation of the results of many studies

[c] Shaheen (1975)

[d] Sartor and Boyd (1972)

[e] BOD = 1/2 COD (see Colston, 1974)

[f] Few samples (less than 10)

[g] Very large variance.

These data indicate that a control measure (such as conventional street cleaning methods) that is most effective in removing large particle sizes may be unable to remove enough of those pollutants found in the less abundant, smaller particle sizes. Therefore, it may be difficult to meet objectives unless extra effort is expended. However, street cleaning may remove important amounts of these pollutants because they are also found in the more abundant larger particle sizes. The effectiveness of street cleaning, therefore, depends on the specific service area characteristics and program objectives.